

### REMARKS

In the August 16, 2004 Office Action Summary, the Examiner rejects all claims pending in the application (claims 1-23). Upon entry of the foregoing amendments, Applicants amend claims 1, 11, 13, 14, 22 and 23 (formerly claim 24) and adds new claim 24. Applicant notes that the Examiner has renumbered Applicant's original claim 23 to be claim 24. Applicant follows the Examiner's numbering convention in adding new claim numbered 24. Applicants submit the above amendments to correct certain informalities noted by the Examiner. All amendments are fully supported by the specification, drawings and claims as originally filed. No new matter is included in the amendments. After entry of this Reply, claims 1-24 (4 independent claims; 24 total claims) remain pending in the application.

### CLAIM, DRAWING, AND SPECIFICATION OBJECTIONS

The Examiner objects to the claims, specification and drawings noting various informalities. Applicant addresses the informalities as suggested by the Examiner. Applicant notes that the specification has been amended at page 18, line 12 to include the missing reference to reference numeral 240A. Additionally, Applicant submits a Replacement Sheet for Figure 3, wherein the reference numeral 302C is deleted. No new matter is submitted with Applicant's amendments. All amendments are fully supported by the specification and drawings as filed.

Thus, Applicant respectfully submits that the amendments render the Examiner's objections moot. Applicant requests withdrawal of the Examiner's objections in view of the Applicant's amendments.

### 35 U.S.C. § 103 REJECTIONS

The Examiner's section 103 obviousness rejections are derived from, and depend upon, a proper combination of Dougherty (U.S. Patent No. 5,465,420), in view of Rizzi (Microwave Engineering Passive Circuits, copyright 1988) in view of the admitted prior art. Applicant traverses these rejections. Applicant notes that "The factual inquiry whether to combine

references must be thorough and searching”.<sup>1</sup> The inquiry “must be based on objective evidence of record”.<sup>2</sup> Moreover, the references must be considered in their entirety including disclosure that tends to teach away from the claimed invention.

As stated in MPEP 2141, “the Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the Examiner does not produce a *prima facie* case, the applicants are under no obligation to submit evidence of nonobviousness.” (emphasis added) In order to establish a *prima facie* case of obviousness, “there must be some suggestion, teaching or motivation to modify the reference or combine the references on which the rejection is based.” MPEP 2142. Moreover, the combination of references must teach or suggest all the claim limitations of the invention.

As described more fully below, the combination of the Dougherty and Rizzi references and the admitted prior art does not sustain a proper section 103 rejection. Specifically, the combination doesn’t teach, suggest or disclose all the claim elements of Applicant’s invention. As discussed below, the references do not teach, suggest, or disclose a RF signal summed with a LO signal to produce a signal substantially equal to the sum of the RF and LO signals and half-rectifying the summed signal to produce an intermediate signal. Thus, the combination of references in view of the admitted prior art cited by the Examiner is improper for establishing a proper section 103 rejection. In accordance with the arguments set forth below, Applicant’s claimed invention is patentable over all art cited by the Examiner, since all the Examiner’s rejections depend upon and are derived from an improper combining of the Dougherty reference, Rizzi reference and admitted prior art. As such, Applicants respectfully request reconsideration and allowance of all claims pending in the application.

#### Claims 1-5 and 11-15

The Examiner rejects claims 1-5 and 11-15 under 35 U.S.C. § 103(a) as being unpatentable over the Dougherty reference, Rizzi reference and admitted prior art. Applicant

<sup>1</sup> *In re Sims*, 277 F.2d 1338, 1342, 61 U.S.P.Q.2d (BNA) 1430 (Fed. Cir. 2002) (citing *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52, 60 U.S.P.Q.2d (BNA) 1001, 1008 (Fed. Cir. 2001)).

respectfully traverses these rejections. Particularly, the Examiner asserts that Dougherty, the primary reference relied upon by the examiner, teaches all the elements of Applicant's claim 1, except that Dougherty does not teach a K-band radio frequency signal and a low noise block downconverter comprising a low noise amplifier. Examiner posits that the admitted prior art discloses a low noise block downconverter for use in a satellite broadcasting system, where the low noise block downconverter comprises a first low noise amplifier for providing an amplified radio frequency signal. The Examiner suggests that it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the mixer of Dougherty in a low noise block downconverter environment of the admitted prior art in order to downconvert higher frequency modulated carrier signals as suggested by the admitted prior art, "i.e. for purposes of terrestrial reception of television signals having video information frequency modulated on a microwave band carrier emitted from a satellite, due to mixer of Dougherty being particularly useful at microwave frequencies and therefore being capable of operating when it is used in a low noise block downconverter and to add the low noise amplifier of the low noise block downconverter of the admitted prior art before Dougherty's mixer in order to strengthen the incoming signal with less noise and to provide gain and input and output impedance as is common in the art before inputting the RF signal to the mixer."

All claim elements are not taught, suggested or disclosed by the cited prior art

The Examiner suggests that Dougherty comprises a high frequency diplexer as is claimed in Applicant's independent claims 1 and 11, when viewed in light of Applicant's specification. Particularly, the Examiner suggests that the Applicant admits that a diplexer may be any configuration comprising a lumped element combiner, etc., used for combining at least two input signals and producing an output. Applicant disagrees with the Examiner's characterization of Applicant's statement regarding the diplexer of the invention. Applicant notes that the correct recitation of Applicant's statement is "that diplexer 300 may be any configuration useful for combining at least two input signals and producing an output signal representing the sum of the

input signals." See Applicant's page 18, line 16. As such, when Applicant's notation regarding the diplexer of the invention is correctly considered, in its entirety, it is noted that the diplexer of Applicant's invention produces a signal equal to the sum of the input signals.

Contrariwise, Dougherty discloses a mixer that operates by combining the RF and local oscillator (LO) signals to produce a "combined signal" equal to the sum of the RF and LO signals. The combined signal is then multiplied upon itself to produce a mixed signal. The Dougherty invention uses a feedback circuit to add a small portion of the mixed signal out of phase to the combined signal prior to multiplying the combined signal upon itself. Dougherty uses a network to provide a short for frequencies near the intermediate frequency. The network also provides a short at its input for frequencies near the LO and RF signals.

The Dougherty reference does not disclose, teach or suggests a diplexer producing a signal equal to the sum of input signals as is disclosed by the Applicant. Indeed, none of the prior art references cited by the Examiner teach, suggest or disclose this feature of the applicant's invention.

Moreover, Applicant amends claims 1 and 11 to include that the downconverter receives the summed input signal (RF summed with LO) and half-rectifies the summed input signal to produce an intermediate frequency signal. Applicant's respectfully note that the art cited by the Examiner does not teach, suggest, or disclose this feature of the Applicant's claimed invention. Indeed, the primary reference relied upon by the Examiner (Dougherty) teaches an intermediate frequency generated by using a feed back network that provides a short for near frequencies near either the intermediate frequency, or the RF and LO frequencies. Neither Dougherty or any of the references cited by the Examiner teach, suggest or disclose an intermediate frequency from the half-rectified summed RF and LO signals, as is claimed by the Applicant.

Thus, for the reasons, discussed above, Applicant respectfully assert that Applicant's claimed invention is patentable over the references cited by the Examiner because the references taken singly or in combination do not teach, suggest, or disclose all the claim elements of the Applicant's invention. Since, the references cited by the Examiner contain no teaching,

suggestion, or motivation to combine the references as proposed by the Examiner, then to combine the Kilmer and Mundigl references would involve impermissible picking and choosing of the various missing claimed elements using hindsight reasoning in an attempt to recreate the claimed invention with Applicants' disclosure as the basis. Without using impermissible hindsight reasoning, it would not have been obvious to one of ordinary skill in the art at the time of the invention to modify the references to include the missing claimed elements as suggested by the Examiner. It is not enough that the invention may be made, or that it would have been obvious to try the proposed combination, there must be some suggestion or motivation to combine the references in the references themselves. Applicants respectfully submit that no motivation exists in references, and therefore, the Examiner's section 103 rejection of the claims should be withdrawn.

#### **Dependent Claims**

The Examiner variously rejects claims 2-10 and 12-21 under 35 U.S.C. § 103. However, dependent claims 2-10, 12-21 incorporate the limitations of the independent claims from which they depend. Namely, dependent claims 2-10 variously incorporate the limitations of patentable independent claim 1; and dependent claims 12-21 incorporate the limitations of patentable independent claim 33. As such, dependent claims 2-10 and 12-21 are also patentable over the cited references. Therefore, Applicants respectfully request the Examiner also withdraw the rejection of these dependent claims.

#### **Claims 22 and 23**

The Examiner rejects claims 1-5 and 11-15 under 35 U.S.C. § 103(a) as being unpatentable over the Dougherty reference, Rizzi reference and admitted prior art in further view of Akaishi (JP 08-250936). Applicants traverse these rejections. Applicants repeat here the arguments regarding the combination of Dougherty reference, Rizzi reference and admitted prior art stated above. Namely, the combination is improper for sustaining a section 103 obviousness rejection. As such, the combination of the Dougherty reference, Rizzi reference and admitted prior art in further view of Akaishi (JP 08-250936) likewise does not sustain a proper section 103

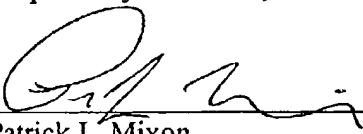
rejection. Namely, there is no motivation or suggestion to combine the three references as suggested by the Examiner and the proposed combination does not disclose, teach or suggest every element of Applicant's invention. Consequently, Applicants respectfully request that the Examiner withdraw his section 103 rejection of claims 22 and 23 based on the combination of the Dougherty reference, Rizzi reference and admitted prior art in further view of Akaishi (JP 08-250936).

After consideration of the Applicant's amendments, Applicant respectfully submits that all of the claims in the application (claims 1-24: 4 independent, 24 total claims) fully comply with 35 U.S.C. § 112 and are patentable over the prior art of record. Consequently, allowance of all remaining claims is earnestly solicited.

Should the Examiner wish to discuss any of the above in greater detail or deem that amendments should be made to improve the form of the claims, then the Examiner is invited to telephone the undersigned at the Examiner's convenience. The Examiner is permitted to charge any fees regarding this Amendment, or credit any overpayment, to deposit account No. 19-2814. A duplicate copy of this request is enclosed for your use.

Respectfully submitted,

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